Kramer Electronics, Ltd.

USER MANUAL

Model:

6810HDxl

SDI/HD-SDI/3G Audio Embedder/De-embedder

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Thank you for purchasing your Kramer **6810HDxl** *SDI/HD-SDI/3G Audio Embedder/De-embedder*, which is ideal for broadcast and production studios, as well as digital / analog AV authoring.

The package includes the following items:

- **6810HDxl** *SDI/HD-SDI/3G Audio Embedder/De-embedder*
- Power adapter (5V DC input)
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables[3]

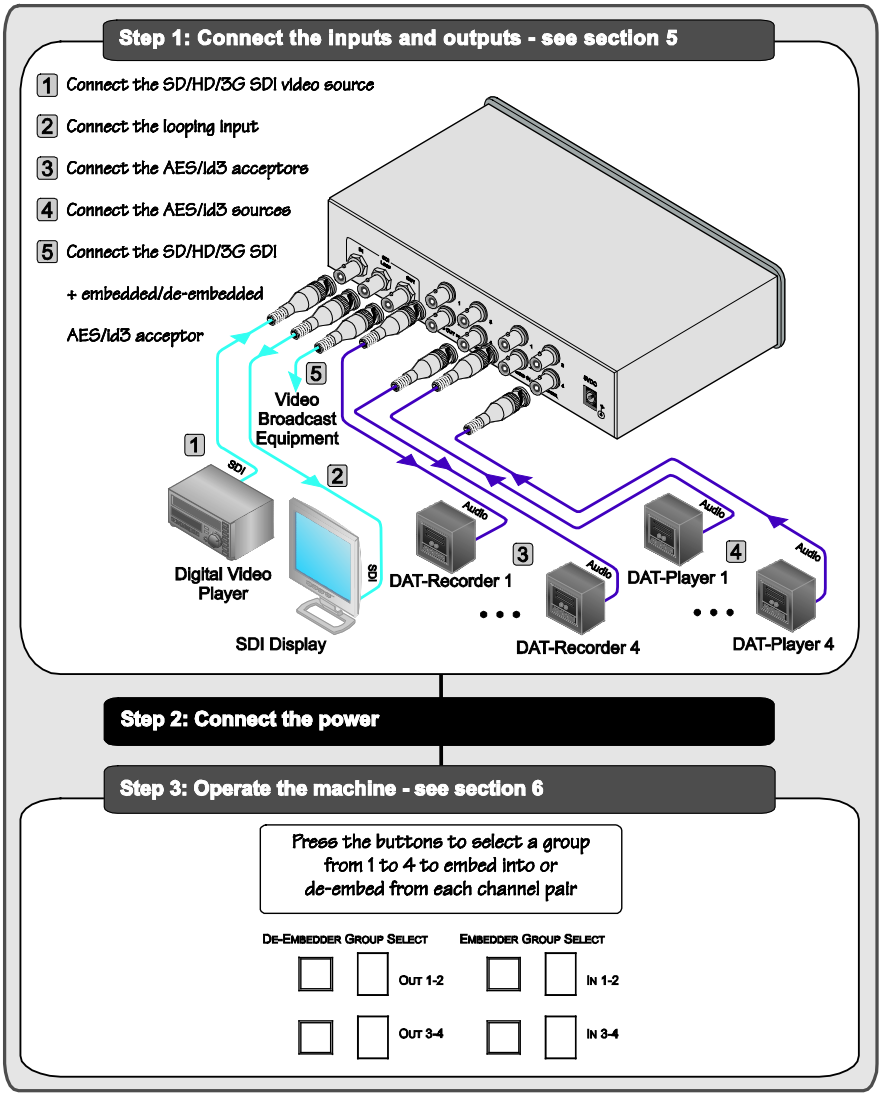
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from the Internet at this URL: http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.



3 Overview

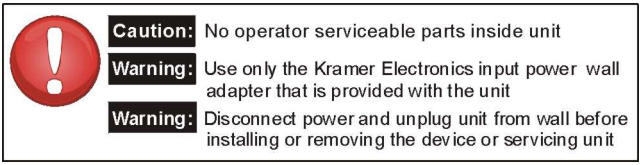
The Kramer **6810HDxl** *SDI/HD-SDI/3G Audio Embedder/De-embedder* is a broadcast quality audio embedder and de-embedder[1] for serial digital video.

The **6810HDxl** features:

- A maximum data rate of 3Gpbs
- 1 SDI video and 4 AES/id3 inputs
- 1 SDI video and 4 AES/id3 outputs
- 1 looping video input
- Group select buttons to choose the group to embed into or de-embed from each channel pair
- Kramer reKlocking™ & Equalization Technology that rebuilds the digital signal to travel longer distances
- Status indicators: audio group detect, embed/de-embed group select, and SD/HD lock
- 5VDC power

To achieve the best performance:

- Use only good quality connection cables[2] to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer **6810HDxl** away from moisture, excessive sunlight and dust


Caution:
No operator serviceable parts inside unit
Warning:
Use only the Kramer Electronics input power wall adapter that is provided with the unit
Warning:
Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

1 It embeds and de-embeds simultaneously

2 Available from Kramer Electronics on our Web site at http://www.kramerelectronics.com

4 Your 6810HDxl SDI/HD-SDI/3G Audio Embedder/De-embedder

Figure 1 and Table 1 define the **6810HDxl** *SDI/HD-SDI/3G Audio Embedder/De-embedder*:

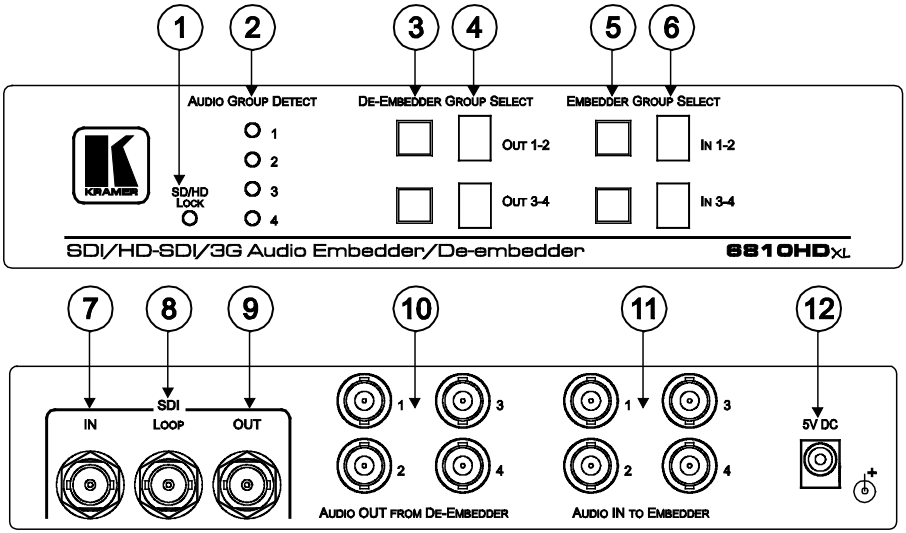


Figure 1: 6810HDxl SDI/HD-SDI/3G Audio Embedder/De-embedder

Table 1: 6810HDxl SDI/HD-SDI/3G Audio Embedder/De-embedder Features

#	Feature		Function
1	*SD/HD LOCK* LED		Illuminates green when an SD signal is detected or blue when an HD signal is detected
2	*AUDIO GROUP DETECT* LEDs		Illuminates when an audio group (1 to 4) is detected on the SDI input stream
3	*DE-EMBEDDER GROUP SELECT*	Buttons	Press to select the audio group which is to be de-embedded into the given channels (OUT 1 and 2, OUT 3 and 4)
4		7-segment LED	Displays the number of the audio group which is de-embedded into the given channels (OUT 1 and 2, OUT 3 and 4)
5	*EMBEDDER GROUP SELECT*	Buttons	Press to select the audio group into which the given channels (IN 1 and 2, IN 3 and 4) will be embedded
6		7-segment LED	Displays the audio group into which the given channels (IN 1 and 2, IN 3 and 4) are embedded
7	*SDI IN* BNC Connector		Connects to the SDI source
8	*SDI LOOP* BNC Connector		Connects to the input loop acceptor
9	*SDI OUT* BNC Connector		Connects to the SDI acceptor
10	*AUDIO OUT FROM DE-EMBEDDER* BNC Connectors		Connects to the AES/id3 audio acceptors (1 to 4)
11	*AUDIO IN TO EMBEDDER* BNC Connectors		Connects to the AES/id3 audio sources (1 to 4)
12	*5V DC*		+5V DC connector for powering the unit

5 Connecting the 6810HDxl

To connect the **6810HDxl** *SDI/HD-SDI/3G Audio Embedder/De-embedder*, as illustrated in the example in Figure 2, do the following[1]:

1. Connect an SD/HD/3G HD-SDI source (such as, an HD/SD digital video player) to the SDI IN BNC connector.
2. Connect the SDI OUT BNC connector to an SDI and AES/id3 acceptor (such as, video broadcast equipment).
3. Connect an AES digital audio source (such as, DAT-Player 4) to the AUDIO IN TO EMBEDDER 4 BNC connector (for channel 4).
4. Connect the AUDIO OUT TO DE-EMBEDDER BNC connector (for channels 1) to an AES digital audio acceptor (such as, DAT-Recorder 1).
5. Connect the SDI LOOP BNC connector to an SDI acceptor (such as, an SDI display).
6. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 2).

1 Switch OFF the power on each device before connecting it to your 6810HDxl. After connecting the devices, connect the power to the 6810HDxl, then switch on the power on each device. The unit recalls its settings after powering down

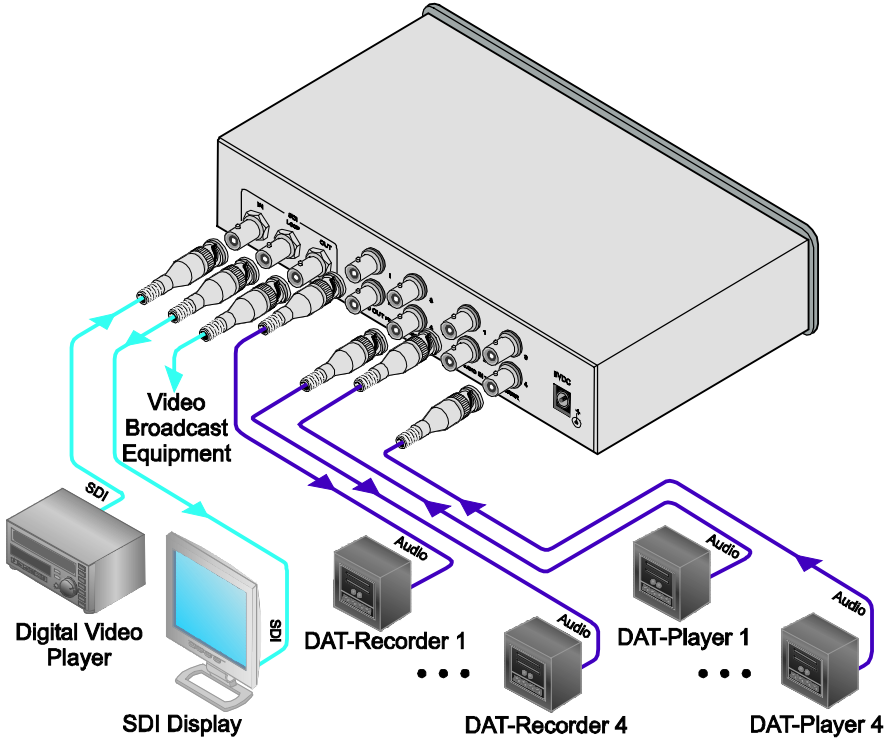


Figure 2: Connecting a 6810HDxl SDI/HD-SDI/3G Audio Embedder/De-embedder

6 Operating the 6810HDxl

To operate the **6810HDxl** as an embedder:

1. Connect the audio sources to the AUDIO IN TO EMBEDDER connectors.
2. Choose the target group by pressing the EMBEDDER GROUP SELECT button.
   The display cycles through groups 1, 2, 3, 4, and – [1].
   The "–" indicates that no group is chosen and the given channels are not embedded.
3. The audio channels are embedded from the audio sources into the selected groups of the SDI data stream[2].

1 If no audio is connected to the AES inputs, the display shows "–"

2 If audio was already embedded in the groups of the SDI stream, it is replaced by the audio embedded by the 6810HDxl

To operate the **6810HDxl** as a de-embedder:

1. Connect the AUDIO OUT TO DE-EMBEDDER connectors to the audio acceptors.
2. Choose the source group by pressing the DE-EMBEDDER GROUP SELECT button.
   The display cycles through groups 1, 2, 3, 4, and – [1].
   The "–" indicates that no group is chosen and the given channels are muted.
3. The audio channels are de-embedded from the selected groups of the SDI data stream to the audio acceptors.

Note: You cannot de-embed the same group for two channels at the same time.

7 Technical Specifications

The **6810HDxl** technical specifications are shown in Table 2:

Table 2: 6810HDxl Technical Specifications[2]

INPUTS:	1 x SD/HD/3G HD-SDI, 1 x SD/HD/3G HD-SDI loop, 4 x AES/id3 on BNC Connectors
OUTPUTS:	1 x SD/HD/3G HD-SDI, 4 x AES/id3 on BNC Connectors
SAMPLE RATE CONVERSION:	48kHz
POWER SOURCE:	5V DC, 1.04A
DIMENSIONS	21.5cm x 16.3cm x 4.4cm (8.6" x 7" x 1.8") W, D, H
WEIGHT:	1.1kg (2.4lbs)
ACCESSORIES:	Power supply
OPTIONS:	RK-1 19" rack adapter

1 You can scroll only the groups where audio is detected (as indicated by the Audio Group Detect LEDs)

2 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

  * FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000496 REV 3